

**Magnetism of Mixed Bismuth-Boron Oxides. ^{209}Bi NQR of $\text{Bi}_3\text{B}_5\text{O}_{12}$
in External Magnetic Fields.**

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Previously unknown magnetism, presumably similar to that found in $\text{Bi}_4\text{Ge}_3\text{O}_{12}$ [1], exists, as evidenced by ^{209}Bi NQR, in mixed bismuth-boron oxides of compositions 2:1 (I), 3:5 (II) and 1:3 (III). The ^{209}Bi NQR spectra of single crystal $\text{Bi}_3\text{B}_5\text{O}_{12}$ (II) were studied in weak external magnetic fields $0 < H_{ext} < 500$ Oe. The number of components in observed spectral patterns at least twice exceeded that in conventional Zeeman-perturbed spectra, and the intensities of spectral lines showed strong orientational dependence. At certain orientations of the crystal (II), drastic oscillations of the integral intensity of the spectra were for the first time observed as H_{ext} increased from 0 to 100 Oe, which is an evidence of strong influence of external magnetic field on the electronic system of the bismuth oxide-based compounds. At least four magnetically nonequivalent Bi positions, two per each crystallographically nonequivalent Bi sites, are identified by ^{209}Bi NQR in $\text{Bi}_3\text{B}_5\text{O}_{12}$. Similar nonequivalence exists, according to the results of preliminary ^{209}Bi NQR studies, in oxides (I) and (III).
[1] V.G. Orlov, E.A. Kravchenko, "New magnetic phenomena in Bi-based dielectrics", *Physica B* **259-261**, 564 (1999); E.A. Kravchenko, Yu.F. Kargin, V.G. Orlov, T. Okuda, K. Yamada, "Local ordered magnetic fields in bismuth dielectrics. ^{209}Bi NQR in $\text{Bi}_4\text{Ge}_3\text{O}_{12}$ single crystal", *J. Magn. Magn. Mater.* **224**, 249 (2001).